Orbit Uncertainty and Close-Approach Analysis Capabilities of the Horizons On-Line Ephemeris System,

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The Horizons On-Line Ephemeris System was initially made available in 1996. It has since been used by 450000 people to generate 700000 high-precision solar system ephemerides and database search results relating to the planets, satellites, and a growing list of asteroids, comets and spacecraft. This database is presently in excess of 90000 objects. Horizons typically receives 23000 requests per month via the three automated access methods:

Interactive terminal:	telnet://ssd.jpl.nasa.gov:6775	(via browser)
	telnet ssd.jpl.nasa.gov 6775	(command line)
Web forms	: http://ssd.jpl.nasa.gov	
E-mail batch job	: horizons@ssd.jpl.nasa.gov (message subject 'BATCH-LONG')	

Horizons has recently been extended to perform linearized covariance mappings. This allows users to obtain orbital motion uncertainties of those asteroids and comets for which a covariance is available, as a function of time, in multiple coordinate systems such as the plane-of-sky.

Also newly available is an on-line close-approach analysis capability. This provides efficient detection of asteroid and comet approaches to planets and the larger asteroids. For asteroids and comets with a computed covariance, approach quantities such as encounter timing uncertainty are computed. This allows convenient assessment of the quality of close-approach knowledge.

Detailed Horizons documentation is available:

Indexed browser format :	http://ssd.jpl.nasa.gov/horizons_doc.html
Printable PostScript file:	ftp://ssd.jpl.nasa.gov/pub/ssd/Horizons_doc.ps